
A New Species of *Bourreria* (Boraginaceae) from Costa Rica

James S. Miller and Bénédicte Sirot

Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299, U.S.A.

ABSTRACT. *Bourreria grandicalyx* is described as new from Costa Rica, and a key is provided to the large-flowered species of the genus, a group restricted to continental tropical America.

In preparing a treatment of Boraginaceae for *A Manual to the Plants of Costa Rica*, two collections of a species of *Bourreria* that was previously undescribed were discovered.

Bourreria grandicalyx J. S. Miller & Sirot, sp. nov. TYPE: Costa Rica. Puntarenas: Parque Nacional Corcovado Aguas arriba de Río Ríncón, camino al Cerro do Oro, 50–400 m, 8°35'N, 83°30'W, 30 July 1990 (fl, fr), *Abelardo Chacón 950* (holotype, MO 5022360; isotypes, BM, CR, GH, INBIO, MEXU, PMA, US). Figure 1.

Arbor usque ad 8 m alta. Folia persistentia; lamina glabra, obovata vel elliptica, 16–20(–25) cm longa, 5–7 cm lata, apice rotundata ad acuta, saepe abrupte acuminata, basi acuta ad fere obtusa, interdum petiolo breviter decurrente; petiolo 2.5–5 cm longo, glabro. Inflorescentia terminalis, cymosa, 2–6 flora. Flos calyce 2.5–4 cm longo, glabro, sed trichomatibus crispatis ad marginem ciliato; corolla alba, tubulari, 6.5–9 cm longa, ad apicem 4–6 cm lata, 5-lobulata, lobulis transverse late ovatis, 1.7 cm longis, 2–2.2 cm latis; staminibus 5, filamentis glabris. Fructus drupaceus, transverse ellipsoideus, 2.5 cm longus, 3 cm latus, maturitate intra calycem accrescentem 4.0–5.5 cm longum omnino inclusus; pyrenis 4, ad medianum affixis, alatis.

Tree to 8 m tall, 20 cm DBH, the twigs glabrous, the young portions smooth, drying black. Leaves persistent; blades obovate or less commonly somewhat elliptic, 16–20(–25) cm long, 5–7 cm wide, the apex rounded to acute, and often abruptly acuminate, the base acute to nearly obtuse, sometimes shortly decurrent along the petiole, the margin entire, both surfaces glabrous, the venation brochidromous, the midrib impressed above, prominently elevated below, the secondary veins 6–11; petioles 2.5–5 cm long, glabrous, canaliculate on the adaxial surface. Inflorescence terminal, a 2–6-flowered cyme, each flower borne on a branch, (1.5–)2.5–4(–6) cm long. Flowers bisexual; calyx 2.5–4 cm long, 2.7–4.5 cm wide at the mouth, the 5 lobes 1.4–2.5 cm long, the exterior and interior

surfaces glabrous but with a distinct row of dense, curly hairs along the inner edges of the lobes; corolla white, tubular, 6.5–9 cm long, 4–6 cm wide at the apex, the 5 lobes widely depressed ovate, 1.7 cm long, 2–2.2 cm wide; stamens 5, the filaments glabrous, 4.3–4.4 cm long, the upper 3 mm free, the anthers 4–4.5 mm long; ovary indistinct, not clearly differentiated from the base of the style, the style 3 cm long, the branches 7 mm long, the stigmas capitate. Fruits drupaceous, transversely ellipsoid, 2.5 cm long, 3 cm wide, completely enclosed in the accrescent calyx at maturity, the calyx enlarged to 4–5.5 cm long, the 4 pyrenes attached to the gynobase at their midpoint, with ca. 6 prominent, overlapping, papery dorsal wings ca. 3 mm high.

Bourreria grandicalyx is known only from the Osa Peninsula in Costa Rica where it occurs from 50 to 400 m in wet forests.

Paratype. COSTA RICA. **Puntarenas:** Cantón de Osa Rancho Quemado, Estón Forestal, Finca Eloy Cubero, elev. 230 m, 8°41'05"N, 83°33'50"W, *Marín 120* (MO).

Bourreria grandicalyx is a distinctive species characterized by its large corolla and calyx and is the only *Bourreria* with fruits completely enclosed by the accrescent fruiting calyx. It is most closely related to *Bourreria costaricensis* (Standley) A. Gentry, with which it shares large flowers, fruits that are round in cross section, the largest fruits in the genus, and pyrenes with a median attachment to the gynobase.

Bourreria is a complex genus in need of taxonomic revision, and it comprises an assemblage of species with a wide variety of morphological appearances (Thulin, 1987; Miller, 1989). *Bourreria grandicalyx* is the largest-flowered species in the genus and is most closely related to the other species with large flowers and pyrenes with membranous ridges, all of which are distributed in mainland tropical America from Mexico to Colombia and Venezuela. With the exception of *B. grandicalyx* and *B. costaricensis*, all of the large-flowered species of *Bourreria* have pyrenes with apices attached to the gynobase by a slender fiber, a group that has been segregated as the genus *Crematomia* Miers (Miers, 1869), but not all members of Miers's genus

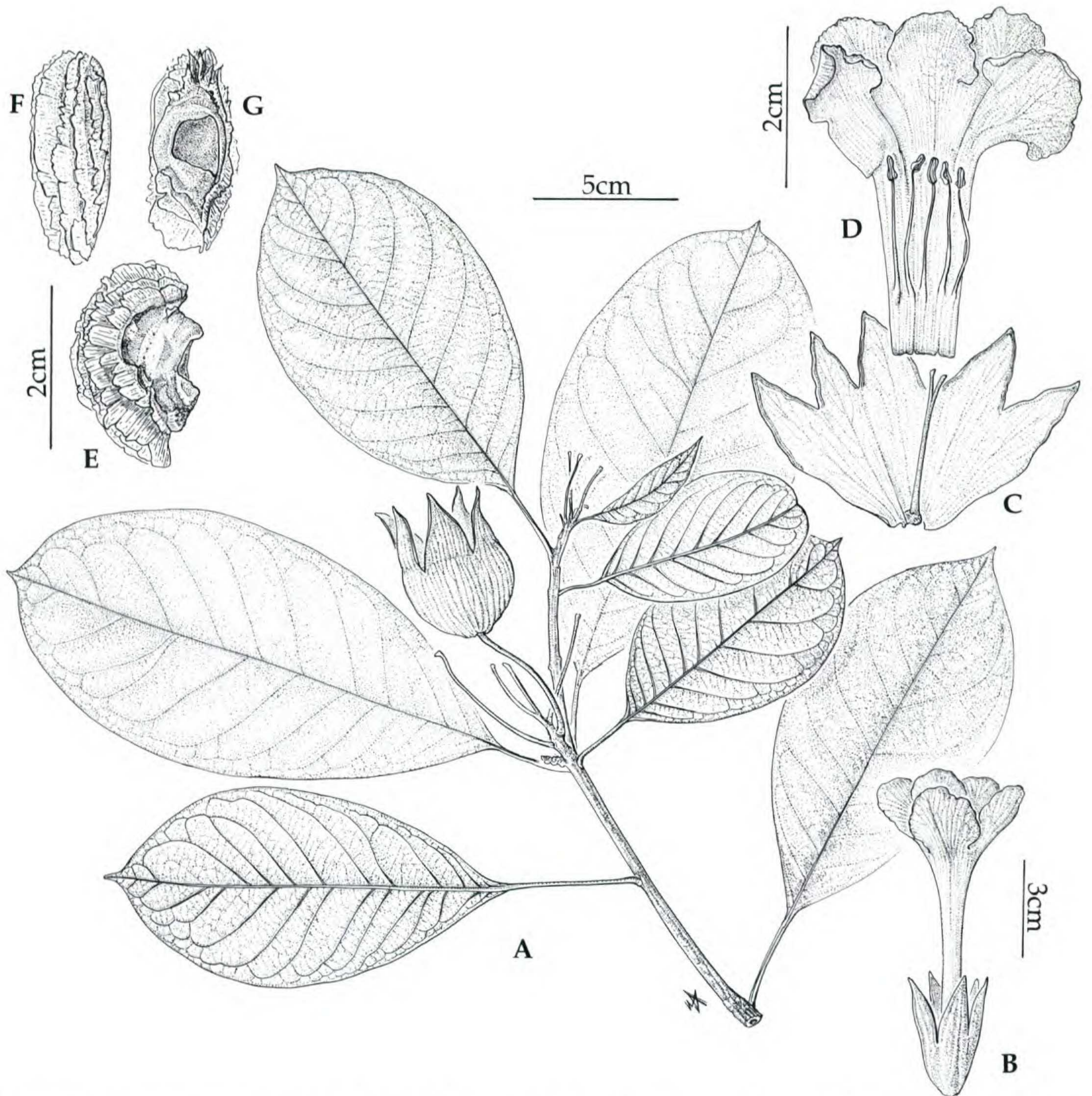


Figure 1. *Bourreria grandicalyx* J. S. Miller & Sirot. —A. Branch with mature fruit. —B. Flower. —C. Open calyx with gynoecium. —D. Open corolla with stamens. —E. Lateral surface of pyrene showing raised, papery wings. —F. External surface of pyrene showing overlapping wings. —G. Internal surface of pyrene showing the point of median attachment. All from *Chacón 950* (MO).

had large corollas. The key provided below to the large-flowered species of *Bourreria*, which occur in Mexico, Central America, and northern South America, is for diagnostic purposes and not meant to indicate the boundaries of a natural group.

KEY TO THE LARGE-FLOWERED SPECIES OF *BOURRERIA*

- 1a. Petioles greater than 10 mm long; leaf blade greater than 6 cm long; plants usually trees.
 - 2a. Leaves glabrous on the lower surface; fruits round in cross section; fruiting calyx enlarged.
 - 3a. Flowering calyx greater than 2.5 cm long; edges of the lobes pubescent;

- fruits completely enclosed by the accrescent calyx; Costa Rica
 - *B. grandicalyx* J. S. Miller & Sirot
- 3b. Flowering calyx less than 1.8 cm long; edges of the lobes glabrous; fruits not enclosed by the calyx; Nicaragua to Colombia
 - *B. costaricensis* (Standley) A. H. Gentry
- 2b. Leaves puberulent on the lower surface; fruits 4-angled; calyx not enlarged in fruit (fruit unknown in *B. superba*).
 - 4a. Inflorescence 5–10-flowered; pedicels greater than 10 mm long; corolla greater than 4 cm long; Mexico
 - *B. superba* I. M. Johnston
 - 4b. Inflorescence with many flowers; pedi-

- cels less than 6 mm long; corolla less than 4 cm long; Mexico to Nicaragua . . . *B. huanita* (La Llave & Lexarza) Hemsley
- 1b. Petioles less than 10 mm long; leaf blade less than 7.5 cm long; plants shrubs or small trees.
- 5a. Leaves asperous above; leaf blades broadest above the middle; Mexico
. *B. hintonii* I. M. Johnston
- 5b. Leaves glabrous or nearly so above; leaf blades broadest below the middle.
- 6a. Corolla less than 4.4 cm long, less than 3 cm wide at the mouth; Venezuela, Colombia
. *B. cumanensis* (Loefling) O. E. Schulz
- 6b. Corolla greater than 6.3 cm long, great-

er than 3 cm wide at the mouth; Nicaragua, Costa Rica . . . *B. quirosii* Standley

Acknowledgments. We thank John Myers for the illustration and Roy E. Gereau for help with the Latin description.

Literature Cited

- Miers, J. 1869. On the Ehretiaceae. *Crematoma*. Ann. Mag. Nat. Hist. 3: 300–313.
- Miller, J. S. 1989. A revision of the New World species of *Ehretia* (Boraginaceae). Ann. Missouri Bot. Gard. 76: 1050–1076.
- Thulin, M. 1987. *Bourreria* (Boraginaceae) in tropical Africa. Nordic J. Bot. 7: 413–417.